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Report of the 9th Session of the Asian-Australian Monsoon Panel to the Climate Variability and Predictability Scientific Steering Group-16

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Disclaimer

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Template for reporting for CLIVAR SSG-16

Panel or Working Group: Asian-Australian Monsoon Panel (AAMP)

1. Contributions to developing CLIVAR science and fit, where appropriate, to the JSC cross cutting topics

a) Development of science plan for AMY: The panel will continue to play a leading role in the coordination of the AMY modeling activity. B. Wang is currently the co-chair of the AMY Science Plan, and H. Hendon is co-chair of the AMY modeling group. The panel proposed that new AAMP member Kitoh replace Satomura as the other AMY modeling co-chair.

b) The panel also proposed a monsoon intraseasonal modeling workshop to be held in conjunction with the next AAMP. Bin Wang and In-sik Kang will take lead in investigating venues, support, and agenda (see Section 5 and Annex A).

c) The AAMP has endorsed and promoted the development of a MJO Task Force that would build on the successes of the US CLIVAR MJO Working Group (see Section 4c).

2. Cooperation with other WCRP projects, outside bodies (e.g. IGBP) and links to applications

a) AAMP promoted MJO prediction assessment which is now endorsed by WGNE.

b) AAMP played contributing role in IWM-4 that was organized by WWRP.

c) AAMP representative attended the WGSIP meeting 01/09 in Miami and promoted the idea of a model simulation/prediction study to assess role/impact of land surface processes for monsoon predictability perhaps as a sub project in GLACE-2. Such analysis/experimentation could be reported at the proposed monsoon intraseasonal workshop.

d) AAMP representative attended the Pacific Panel Meeting in Perth (03/09) and endorsed the activity to write a review paper on the role of the MJO in ENSO.

3. Workshops/meetings held

a) The 9th Session of the CLIVAR's Asian-Australian Monsoon Panel (AMMP9) was held at the China Meteorological Administration (CMA), Beijing, China from 22-25 October 2008. AAMP9 was held jointly with the WMO International Workshop on Monsoons IWM4, the Fifth Asian Monsoon Years (AMY) International Workshop and the 2nd Pan-WCRP Workshop (the first such was a 3-day meeting held in Irvine, California in June 2005). This was a unique opportunity to bring together scientists with a CLIVAR focus and scientists/forecasters with a WWRP focus (operational forecasting and application). The AAMP was actively involved in the 2nd Pan-WCRP Workshop, and participated in the discussion on cross cutting activities and in the development of the proposed joint activities. The panel is particularly

interested in the possible development of a WCRP/WWRP Project on Simulation and Prediction of Monsoon IntraSeasonal Oscillation (MISO) that was proposed by Yasunari and which would be complimentary to the historical intraseasonal prediction project that panel members have been advocating (below). The AAMP agreed to help formulate and refine the Pan-WCRP project as it evolves.

b) Session at AOGS2008, Busan Korea, was promoted/co-organized for: AMY – A New Coordinated Asian Monsoon Experiment

c) AMY workshops held in Busan (26/6/08) and Beijing (4/11/08), which were attended by AAMP. Implementation plans were refined.

4. New activities being planned, including timeline

a) AAMP is supporting the development of the science plan for two field experiments in the equatorial Indian Ocean that focus on the initiation and dynamics of the MJO: CINDY/DYNAMO (late 2011-2012; Yoneyama/Zhang) and TRIO (Late 2010 early 2011; Vialard/Duvel). The MJO plays a key role in monsoon variability but is not well simulated or predicted. The goal of these experiments is to enhance understanding of the interaction of convection and large-scale circulation and the interaction with ocean.

b) The AAMP is facilitating a numerical prediction experiment for the monsoon intraseasonal oscillation/MJO. This project has been endorsed and supported by APEC Climate Center (APCC), CLIVAR/AAMP, the SSC of AMY (2007-2011), the WCRP/International Monsoon Study (IMS) and THORPEX. The work plan was developed by APCC/ Climate Prediction and Application to Society (CliPAS) and the USCLIVAR MJOWG, both of which include members of AAMP. The Scientific Objectives are to determine potential and practical predictability of ISO in a multi-model experiment (MME), reveal new physical mechanisms associated with intraseasonal variability that cannot be obtained from analyses of a single model and to determine ISO's modulation of extreme hydrological events and its interannual variability and contribution to interannual climate variation. Requests to centres to contribute hindcasts and long control runs have been circulated with a May 2009 deadline for participation commitment, and December 2009 for data submission.

c) The AAMP is actively promoting and endorsing the formation of the MJO Task force proposal. The task force is a follow-on to U.S. CLIVAR MJO Working Group and will cross-cut many WCRP and WWRP efforts, including CLIVAR AAMP and WGSIP, GEWEX Modeling and Prediction Panel, and THORPEX. The task force will be relevant to the scientific goals of programs such as YOTC, AMY, CASCADE, and CMMAP. The aim of the task force is to (1) further develop process oriented metrics/diagnostics to better understand the physical mechanisms necessary to facilitate model improvement in the ability to simulate and forecast the MJO, (2) facilitate and promote analysis of multi-scale interactions of convectively coupled waves with emphasis the vertical structure and diabatic heating using high resolution modeling frameworks and the best available satellite data, (3) promote the ongoing evaluation of real-time MJO forecasts (endorsed by WGNE), (4) expand efforts to develop and implement MJO forecast metrics under operational conditions, including boreal

summer focus and multi-model ensemble development, and (5) develop experiments for assessing MJO predictability and improving forecast skill of the MJO and closely related phenomena from contemporary/operational models. The proposal for this task force was presented to the JSC in April 2009 and further action awaits their recommendation.

5. Workshops/meetings planned (see ANNEX A also)

AAMP proposes to have a joint AMY/AAMP/MJO Task force workshop in 2010 on monsoon intraseasonal variability. This cross-cutting activity will provide a framework for assessing historical MJO predictability from hindcast experiments, the skill of real-time forecasts, and report on recent advancements for simulation of monsoon ISV and the MJO, including results from high resolution global models such as the NICAM that runs on the earth simulator. Case studies from Africa, Asia, and Australia demonstrating the use of MJO predictions for decision making in agricultural systems will be sought. This will help to focus research priorities on issues of immediate relevance for decision making, and foster interaction with IGBP (e.g., iLEAPS).

6. Issues for the SSG

a) Challenging to organize activity within AAMP due to limited travel resources. Most panel members are unable to fully fund themselves to the meetings. Furthermore, participation in the AAMP-promoted activities is usually dependent on securing research funding, which is difficult to obtain in many of the pertinent countries to the AAMP (most Asian countries don't have completive resources available as in the US and UK). Challenge is for AAMP to provide motivation/justification for investment into fundamental monsoon science.

b) AAMP appears to have had success and generated momentum for advancing understanding and prediction of monsoon intraseasonal variability (MJO Task Force, prediction experiment, field programs). However, very little activity on decadal variability/prediction and climate change is being promoted. With the enhanced focus in AR5 on decadal prediction, the time would appear to be right for the AAMP to try to spin up activity to address decadal variation and prediction of the monsoon.

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ANNEX A

Proforma for CLIVAR Panel and Working Group requests for SSG approval for meetings

Requests should be made through D/ICPO (hyc@noc.soton.ac.uk), against the following headings:

1. Panel or Working Group: AAMP

2. Title of meeting or workshop: Monsoon ISV modelling workshop in conjunction with AAMP meeting.

3. Proposed venue: possibly APCC Korea

4. Proposed dates: mid-2010

5. Proposed attendees, including likely number: AAMP panel members, representatives from various forecast and modelling centres. Panel meeting would be ~8-10 people, workshop ~60-80 people.

6. Rationale, motivation and justification, including: relevance to CLIVAR themes & JSC cross cutting topics and any cross-panel/working group links and interactions involved: Monsoon variability is dominated by ISV. Accurate prediction of monsoonal features such as on-set, duration, and spell-characteristics that manifest themselves in ISV would have wide application in agriculture, water resource management, disease control, etc. However, simulation, much less prediction, of monsoon ISV remains a challenge Simulation and prediction of monsoon ISV is a focus for a number of WCRP panels and activities, including WGNE, AAMP, AMY, the MJO Task Force. The proposed modelling workshop would a) provide an up-to-date assessment of the current capability to predict and simulate monsoon ISV, b) match the current predictive capabilities with prediction needs of e.g. the agricultural and water resources sectors, c) provide insight into the problems and issues that need to be addressed to move modelling capability forward, and d) provide a priority assessment for future research needs based on a – c above.

   The AAMP panel meeting would then follow after the conclusion of the modelling workshop.

7. Specific objectives and key agenda items: a) assess ability of operational forecast centres to predict monsoon ISV at lead times to 1 month. b) assess current capability to simulate Monsoon ISV and MJO with global climate models and high resolution global and regional models, c) assess current state of knowledge of mechanism and dynamics of monsoon ISV, and d) identify key deficiencies that need to be addressed to advance ability to simulate and predict monsoon ISV.

8. Anticipated outcomes (deliverables): a) Assessment of current capability to simulate and predict monsoon ISV, b) Draft recommendations for path forward to improve simulation and prediction of monsoon ISV, and c) Link these proposed research activities with current and potential future applications of such forecasts in agricultural systems and water resources.

9. Format: Multi day workshop that combines targeted presentations and discussion sessions

10. Science Organising Committee: Jointly from AAMP, MJO Task Force, Monsoon ISV prediction experiment, AMY modelling group, Yasunari

11. Local Organising Committee: TBD, perhaps APCC, or In-sik Kang in Seoul

12. Proposed funding sources and anticipated funding requested from WCRP: We propose that the modelling workshop is a joint activity between AAMP/AMY/MJO Task Force/YOTC/THORPEX and perhaps WGSIP and WGNE. We would seek local support and support from the various other programs that are interested, CLIVAR funds would be requested for panel members to travel for the AAMP panel meeting.